GEOGRAPHIC NEWS BULLETINS

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THE NATIONAL GEOGRAPHIC SOCIETY

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General Headquarters, Washington, D. C.

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A MOSQUITO NET AND AN UMBRELLA MAKE A TENT

The white man's medical "magic" is being accepted by native peoples everywhere. Far up in the hills of Northern Siam, Buddhist priests guard themselves from malarial mosquitoes with an odd arrangement of sacred parasols and cheesecloth (see Bulletin No. 5).

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Byrd Expedition Homeward Bound

AFTER fifteen months of hard work and isolation in a land of ice, the members of the Second Byrd Expedition to the Antarctic are on the way home.

Their two ships, the ironclad *Jacob Ruppert* and the barkentine *Bear of Oakland*, have docked at Dunedin, New Zealand, and the expedition is expected to arrive in the United States about the first of May.

All the world is waiting to hear what new things these forty-six men will have to tell. Radio and early newspaper reports list an amazing variety of accomplishments.

Antarctica Not Two Continents

For instance, there was a theory that Antarctica was divided into two continents by an ice-filled strait running from the Ross Sea to the Weddell Sea. These two great bays opposite each other supported the proposition, but Byrd, following a series of flights over unknown territory in Marie Byrd Land, reports that he secured data to disprove this theory.

By aerological observations and altimeter soundings of surface elevations, he learned that a high plateau stretches unbroken from the South Pacific coast to the Queen Maud Range near the Pole. Hundreds of aerial photographs taken during the flights will make possible the first map of this region.

There were other mysteries connected with the vast mountainous plateau of Marie Byrd Land, which covers an area of 200,000 square miles. What was its shore line? Was it part of the continent or a huge archipelago reaching into the Pacific? Were these mountains another link in the great Andean chain which had already been traced in Graham Land and again in New Zealand? Since the days of Cook no explorer had been able to push through the ice-filled waters north of Marie Byrd Land.

This feat Byrd accomplished in the sturdy old *Jacob Ruppert*. Crossing the Antarctic Circle northeast of the Ross Sea, he sailed steadily eastward over an unknown part of the South Pacific, through the worst ice pack in the polar seas. As many as 8,000 bergs were sighted in twenty-four hours. No land was found, a huge area was identified as Pacific Ocean, and the archipelago idea was definitely disproved.

A later expedition by sledge gave further geological evidence supporting the theory that the mountains of Marie Byrd Land may belong to the Andean chain.

Byrd Studied Weather at Advance Base

By occupying a base 123 miles south of Little America, Admiral Byrd was able to obtain valuable meteorological (weather) data. The first meteor-observation program in Antarctica was initiated, and the first cosmic ray research conducted.

One of the newest types of exploration was the charting of land buried beneath 600 feet of ice. Important discoveries were revealed through seismic soundings of the ice cap. The thick Ross Ice Shelf, where Little America is located, was supposed to rest entirely upon water, but islands, reefs, and even peaks have now been mapped, all above sea level, although completely hidden under the ice. The first measurements of the thickness of the polar ice cap were made, permitting a more accurate estimate of the total volume of Antarctic ice.

These revelations are a few of the results of an expedition that set forth to explore nineteen separate realms of science in the least known continent. Geographical discovery was only one phase of this program, which included astronomy,

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Photograph from Roscoe Scarle

MIGHTY MACHINERY AND A NOBLE PLAN DEFEATED BY A TINY INSECT

When the French attempted to dig a canal at Panama they brought in huge dredges and the best machinery of the period. But the project had to be abandoned because the French had not counted on the mosquito. The discovery that the mosquito spreads malaria marks the real beginning of the White Man's conquest of the Tropics (see Bulletin No. 5).

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Bulgaria, Land of Attar of Roses

BULGARIA'S population is increasing. A recent census of this Balkan nation shows that it had 6,081,049 inhabitants at the end of 1934, as compared with 5,478,471 in 1926. Bulgaria has an area a little less than that of Ohio.

When Bulgaria is mentioned one usually thinks of farmland and forests, and a glance down the list of the chief exports of Bulgaria confirms this impression. Cereals, tobacco, eggs, lumber and minerals are all important. Yet Bulgaria's most distinctive product is a luxury—attar of roses—of which it produces three-fourths of the world's supply.

Discovered by Wife of Mogul Emperor

Jahangir, the Mogul emperor, amused Nur Jahan by piping rose water through her garden at Delhi, and upon its surface she first discovered the bright pearls of attar. Later an old Turk, seeing the wild roses that gave their name to "Shipka," started the industry which won for the plain between the Balkans and the Middle Mountain the name of "The Rose Valley."

Attar of roses is used as a base and fixative rather than for its scent alone, and the skilled perfumer determines whether this product of peasants shall suggest floppy-brimmed hats and flowered chiffon, or sleek silks and exotic earrings.

Brightly dressed peasant women spend hours before and after dawn picking dew-drenched rosebuds, and peasant men ride from garden to distillery bolstered up between more rose petals than Cleopatra spread for Antony. But they're now poor, for all that.

These unspoiled Bulgarian peasants, who never knew luxury, depend on it for their daily bread, and, although they know no political economy, it affects both their economies and their politics. Because of the competition between private and cooperative distillers, rose oil has come to involve bankers and politicians as well as gardeners.

The old firms are not only finding a decreased sale but are also facing the competition of cooperative distilleries, opened under government protection and boom conditions.

How Attar of Roses Is Made

In the making of attar of roses, petals, mixed with water, are sealed into great copper retorts heated by wood fires. During the first distillation, rose water trickles out through cool coils and a green oil rises like cream.

A single retort may hold half a ton of petals. Such a retort can be refilled five or six times between dawn and afternoon, when the second distillation begins; yet a battery of twelve retorts, working 24 hours a day during a 25-day season, produces only 200 pounds of attar.

If the dewy petals are held too long, they ferment and the oil is ruined. By four o'clock in the afternoon the last mixture of petals and water is drained off into a convenient brook, and the distilled rose water, from which the floating green oil has already been removed, is distilled again. From this second process a yellowish oil is obtained.

A blend of these two oils forms the base for the world's best perfumes. Attar of roses has a most persistent but not strong odor, does not readily evaporate or spoil, and is shipped in triple-sealed copper flasks shaped like flat-sided canteens.

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meteorology, oceanography, biology, zoology, physiology, glaciology, geology, cartography, magnetism, bacteriology, and botany.

One of the other tasks of the expedition was the cancellation of forty huge sacks of mail postmarked in the world's southernmost post office. This strange cargo will reach San Francisco late in March, and then will be forwarded directly to stamp collectors in all parts of the world. To help reduce the heavy indebtedness of the expedition, a limited number of special envelopes, autographed by Admiral Byrd, will be offered for sale.

Four separate types of transportation were successfully used by the Second Byrd Expedition—boat, airplane, dog sledge, and tractor. Aside from the regular routine work of the party, ten major flights, two long sledge trips, and two tractor journeys were made. One sledging party covered 1,410 miles and reached a point within 180 miles of the South Pole, the nearest approach by land since the expeditions of Amundsen and Scott.

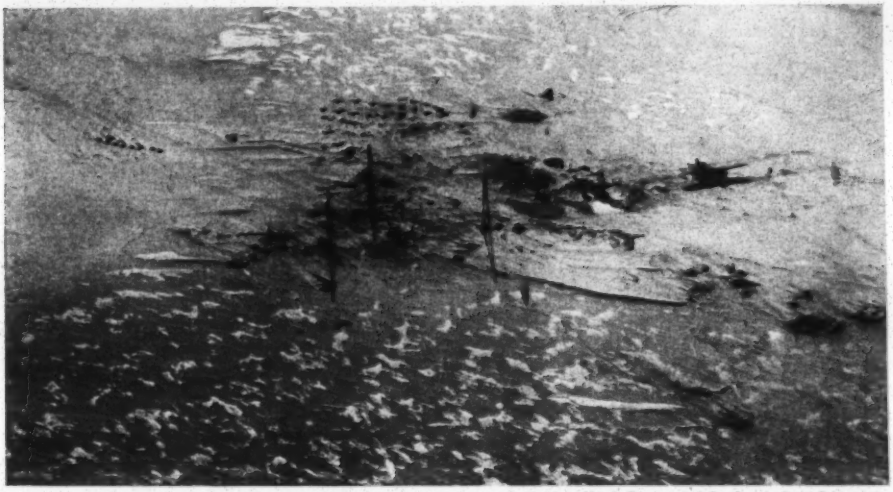
The first official account of the Second Byrd Antarctic Expedition's activities in the far south will be published in the *National Geographic Magazine*. The National Geographic Society was one of the sponsors of both the First and the Second Byrd Antarctic Expeditions.

Note: Students preparing projects or units of work based on the Byrd Expeditions will find helpful references and additional illustrations in the following: "Conquest of Antarctica by Air," *National Geographic Magazine*, August, 1930; and "Mapping the Antarctic from the Air," October, 1932.

See also in the GEOGRAPHIC NEWS BULLETINS: "Sea, Stratosphere, and Polar Ice Featured in 1934 Explorations," week of January 14, 1935; "Last Call for Mail to Little America," week of November 19, 1934; "The Penguin, F. F. A. (First Family Antarctica)," week of January 22, 1934; "Following New Conquests of Antarctica," week of January 8, 1934; "South Latitude 78° 35′; West Longitude 163° 40′," week of December 18, 1933; "Little America, Antarctica, Gets a Postmaster," week of October 30, 1933; and "Admiral Byrd Takes Dogs as Well as Planes to Antarctica," week of October 16, 1933.

Consult also the map of the Antarctic Regions published as a free supplement to the October, 1932, *National Geographic Magazine*. Additional copies can also be had postpaid at 50c. (paper) and 75c. (linen).

Bulletin No. 1, March 11, 1935.



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THE MOST DESERTED VILLAGE IN THE WORLD

Little America, base of the First and the Second Byrd Antarctic Expeditions, again is left to the mercy of Antarctic storms. This photograph, taken from the air during the first expedition, shows the wireless towers which kept the party in touch with civilization, and the plane, *Floyd Bennett*, which carried Admiral Byrd and his gallant companions to the South Pole. Living quarters and other buildings cannot be clearly made out because they are banked deep with snow.

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The Map, Silent Guide Through the Ages

YALE UNIVERSITY recently directed attention to its service as a pioneer in the publication of geography manuals and maps with an exhibit at New Haven, Conn., of 1,100 early atlases and 2,500 ancient geographies and gazetteers. New Haven, sometimes called "the map city," was represented with more than seventy-five maps and atlases. New Haven was one of the first planned towns in the New World.

More than 3,000 years ago Rameses II outlined his estates along the Nile River on rude tablets, and Babylonians indicated roads, cities, and mountains on clay. These are perhaps the oldest examples of maps known.

Yet no one race alone invented the map. It grew, improved, and approached perfection as science advanced with civilization.

Ptolemy, Father of Geography

Most famous of all early maps are those in the atlas or "Geography" of Claudius Ptolemy, an 8-volume work dating from about 150 A. D.

Though lost to the world of learning through the Dark Ages, Ptolemy's books were later rediscovered. One of the oldest manuscript copies was found at Mount Athos, and a reproduction made in 1867 is on display in the Library of Congress at Washington, D. C. Six of his eight books consist of tables of latitude and longitude for about 8,000 places.

In his remaining books, Ptolemy discusses the stars, mathematical problems of geography, the length of days, the sun's course, and differences in time at different places.

With his books are maps of 26 countries and one map of the world. In his colossal task Ptolemy used all geographic lore that had been collected up to his time. Though crude and full of mistakes, it was the greatest step ever made in presenting world geography in scientific form.

His maps show how traders and adventurers had pushed the rim of the known world as far north as the Shetlands and given size and shape to the British Isles. More of the Nile was shown and part of Africa below the Equator. The Indian Ocean got a new and more accurate mapping, based, no doubt, on notes brought by silk traders from the Far East.

Romans Had Road Maps

Pliny and Seneca both say the Romans made topographic maps, and history mentions their maps of Italy and Armenia; but no such work survives.

There is indirect proof, however, that the Romans made road maps strangely like those used to-day by motor tourists and in railway folders. Such a road map, reaching from England to the mouth of the Ganges, in India, was copied by a monk of Colmar about 1265.

To meet the needs of the Crusaders, flocking down the highways of Europe and into Asia Minor, there developed a sort of pictorial road map. A good example in the British Museum is a copy of a drawing by a St. Albans monk, Matthew Paris. Its crude pictures show the towns along the route from London to Jerusalem. The "map" of Palestine also shows the sea, with ships carrying crowds of people.

Printing, which, like the compass, probably came to Europe from the East, had the same galvanic effect on map-making as on some other arts. Ptolemy's "Geography," now translated, became so popular that it was to go through more than fifty editions. Columbus used it. Despite its errors, or thanks to them, he accidentally found the New World, which discovery set all civilization to revising its maps.

Sea Serpents and Mermaids on Medieval Maps

As the world's true pattern took form, medieval maps, with unexplored areas decorated by sea serpents, mermaids, wrecked galleons, and chubby angel faces blowing the winds, began to fade from use.

Some such rare old maps, preserved in the library of the National Geographic Society, show cannibal feasts; men with dogs' heads; men with no heads at all, their faces set in their breasts; a man using his one big foot as an umbrella, holding it up while he sits in its shade; one-eyed people; cows with wings; roosters as big as horses; babies riding lions; Noah's Ark with dormer windows, like a modern suburban home!

Gerhard Kremer, known by his Latinized name of Mercator, was among the first to break with these old traditions. Famous mathematician and cartographer of Flanders, he drew a

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By the time attar of roses reaches the perfume-user it has been not only diluted with alcohol to enable the scent to stimulate the nostrils more readily but is also pretty well mixed with castor from Russian beavers, civet from Abyssinian cats, ambergris from sperm whales, musk from Tibetan musk deer, benzoin from Siamese forests, and storax from the Taurus Mountains.

To collect the raw materials for a bottle of perfume, a young gallant would have to explore mountain and sea, and his tribute would include not only trees and flowers from the far corners of the earth but a goodly menagerie as well.

Note: For other references, and natural color photographs of the attar of roses industry in Bulgaria, see also "Bulgaria, Farm Land Without a Farmhouse," *National Geographic Magazine*, August, 1932; "From England to India by Automobile," August, 1925; "The Battle-Line of Languages in Western Europe," February, 1923; "The New Map of Europe" and "The Whirlpool of the Balkans," February, 1921; and "Bulgaria and Its Women," April, 1915.

Photograph by Wilhelm Tobien

EVERYWHERE IN BULGARIA ONE FINDS FLOWERS

Gypsies shout their wares at a curb market in Sofia, the capital of the Balkan kingdom which produces three-quarters of the world's supply of attar of roses. These street vendors add a touch of color to the otherwise commonplace appearance of the shopping district of Sofia.

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Guam Is Having Cat Trouble!

GUAM, lonely Pacific outpost of Uncle Sam completely encircled by scores of islands under Japanese mandate, does not often come into the news. But the island is small (its area is only three times that of the District of Columbia), and when a surplus of cats recently became a menace to the poultry industry, an important source of food, the naval governor wired Washington.

The U. S. Department of Agriculture promptly came to the rescue with a pamphlet dealing with cat traps, and a supply of the booklets is being rushed to Guam.

Guam is the second smallest and one of the most isolated of American possessions. Its importance has always been theoretical. As part of the chain of American stepping stones across the Pacific, however, it offers a convenient base for repairs and supplies for American naval vessels, and a handy landing spot and relay station for cable lines. More recently it has come into the news also as a refueling depot for a proposed trans-Pacific airline.

Island Is 32 Miles Long

When residents of Guam think of traveling, their thinking is in terms of thousands of miles. More than 1,100 miles of open water separate the island from the Philippines, while the ocean jump to Midway, nearest of the Hawaiian Islands, is even greater—some 1,700 miles.

Guam's strategic value is out of all proportion to its size and population. Its length is 32 miles and its average width about six miles. Only 19,800 people, more than nine-tenths of whom are native Guamese, a people similar to the Filipinos, inhabit this coral-reefed oasis. The population, however, is growing. It jumped 40 per cent in the last decade.

Although the island lies within the Tropics, its climate is tempered by the northwest trade winds. Generally speaking, the seasons conform with those of Manila, the least rain falling in the "winter" months.

Guam was known to Europeans a century before the Pilgrims landed at Plymouth Rock, having been discovered by Magellan himself during his historic voyage of 1521, when the ship he commanded up to the time of his death succeeded in the first trip around the globe. Missionaries reached the island a century and a half later.

Filipino Influence Is Strong

The natives of Guam are, as a rule, of good physique and pleasing appearance. Owing to their mixed blood, their complexion varies from the white of a Caucasian to the brown of a Malay. Most of them have glossy black hair, which is either straight or slightly curly. It is worn short by the men and long by the women, either braided, coiled, or dressed after the styles prevailing in Manila. Filipino influence in Guam is strong, for ever since Spanish colonial days the two territories have been linked commercially and socially.

Most of the people are farmers. There are few masters and few servants on the island. As a rule the farms are not too big to be cultivated by the family, all the members, even the little children, lending a hand. The Guamese, who call themselves Chamorros, are a happy, carefree lot, fond of festivities, dancing, singing, story telling, and contests of strength and skill.

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world chart in 1569 on the "Mercator Projection," which gave navigators a new and safer system for plotting their courses.

By this projection lines of latitude and longitude are mathematically spaced and drawn at right angles to each other. On this grid sailors have merely to rule a straight line as their course and sail to port. Because the earth is round, this does not give the shortest route between two points, but it does show the right "bearing," or direction.

In his time Mercator helped to change map-making from an art into a science. New and accurate instruments for measuring the ground were coming into use, and slowly they led the way to topographic surveys.

Note: See also "The Society's New Map of Asia," *National Geographic Magazine*, December, 1932; "The Columbus of the Pacific (Captain James Cook)," January, 1927; "Syria: The Land Link of History's Chain," November, 1919; "Impressions of Palestine," February, 1915; and "Recent Geographic Advances," April, 1911.

Some recent additions to the large wall-map collection being published by the National Geographic Society:

Caribbean Countries—December, 1934
Asia—December, 1933
United States—May, 1933
Africa (in preparation)
World—December, 1932
Antarctic Regions—October, 1932
Travels of Geo. Washington—January, 1932
Europe—December, 1929

These maps were published as free supplements to the *National Geographic Magazine* of the dates given. Additional copies may be secured postpaid from the Washington, D. C., headquarters of the National Geographic Society for 50c. per copy on paper, and 75c. per copy on linen.

Bulletin No. 3, March 11, 1935.

Photograph Courtesy C. S. Hammond by Wide World

HOW A MAP BECOMES A GLOBE

Long before Columbus and other explorers proved that the world was round, a globe was used to illustrate certain geographic theories. Globes did not come into general use in navigation and schools, however, until the Middle Ages. In the manufacture of globes to-day the map is imposed in gores, or sections, on a metal ball.

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Man's Winning Fight Against Malaria

CEYLON, the "Pearl of the Orient," recently has been a battlefield of one of the most intensive campaigns waged in the history of modern medical science.

Swept by a mysterious "green germ malaria," the big island south of India counts a toll of 12,000 dead and more than 1,000,000 afflicted by a type of malady new to British health authorities. Scores of workmen, under the direction of skilled engineers, rushed to every swamp and pool, oiling the waters to kill mosquitoes, and finally the spread of the dread disease was checked.

The battle against malaria, in all of its forms, is centuries old, but until very recently this scourge of the tropics has been decidedly on the winning side. This was because no one thought of connecting the dire "jungle fever," as malaria was called, or the even more dreaded yellow fever, with the apparently harmless mosquito.

Discovery of a British Army Surgeon

Quinine, a drug prepared from the bark of the cinchona tree, was used as early as the seventeenth century as a curative for malaria, but, until the cause of the disease was discovered, little could be done to prevent it. In 1892 a British army surgeon, Sir Ronald Ross, began his famous malaria studies. He discovered malarial parasites in the body of an anopheline mosquito, and proved that the chain of infection was from man to mosquito to man. It was found that only the *anopheles* could transmit malaria, and from that moment began a war of destruction against this species.

Although yellow fever is the more fatal of the two chief mosquito-transmitted diseases, malaria is a more dangerous menace because it is difficult to control. The *anopheles* (malaria-carrying mosquito) is rural in its habits, breeding in pools, swamps, and along the edges of streams and ponds; whereas the *Aedes aegypti* (yellow fever-carrying mosquito) is domestic and seldom flies far from towns. Moreover, a malaria patient may remain capable of passing on the disease for a long period of months, while in yellow fever the infective period is limited to the first three days of illness.

The dramatic, winning fight which civilization has waged against the insect world has had important geographic results. Americans were able to complete the Panama Canal only after successfully defeating the mosquito. Malaria had been one of the major causes for the failure of the French a few years before (see illustration, page 2). When the Panama Railway was completed in 1859 it was said that a life had been lost for every tie laid down.

General Gorgas began his famous health campaign on the Isthmus in 1904, and in 1906 the last case of yellow fever developed in the Zone. Malaria receded a bit more slowly. There were 821 cases per 1,000 of population in 1906, but by 1932 this was reduced to 14.

Canal Zone Virtual Health Resort

Where possible, streams, swamps, and pools have been drained and filled in. Ditches have been lined with concrete, water margins cleared of weeds and brush, and all suspected breeding places oiled weekly, or dusted with Paris green to kill the larvae which feed on the surface.

Minnows and top-feeding fish have also been found successful in destroying the larvae. Town streets have been paved, sewers installed, and houses carefully screened. Inspection is rigid and incessant, and larvae hunters make constant surveys of the surrounding country. As a result the Panama Canal Zone has become a virtual health resort in the Tropics, with as clean a record as any northern city.

Throughout Central America the Medical Department of the United Fruit Company is opening to farming, regions once thought uninhabitable. A recent example is Puerto Armuelles, Panama, where there is a 100,000-acre banana plantation. In 1928 nearly every employee was laid up with malaria at one time or another, and it was recommended that the site be abandoned. Then anti-larval methods were tried, together with supervised doses of quinine and plasmochin, and soon the district was under control. Plasmochin is a newly-discovered preparation from quinine which renders the patient incapable of infecting mosquitoes.

The Suez is another canal closely linked with the history of mosquito control. The little town of Ismailia, 100 miles south of Cairo, was chosen by De Lesseps as headquarters during the construction of the canal, but it was found to be hopelessly unhealthy. Between 1884 and 1897 there were 1,700 cases of malaria per year, and figures for the following years mounted even higher.

In 1902 Sir Ronald Ross was invited to examine the town. He outlined a plan of attack,

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The fruit of a common tree of Guam is used by the natives to stupefy fish. This fruit is pounded into a paste, inclosed in a bag, and kept overnight. At low tide the next morning the bags of pounded fruit are sunk in certain deep holes in the reefs offshore. The fish soon appear on the surface, some of them lifeless, others attempting to swim, or faintly struggling on their backs. The natives scoop them in their hands, sometimes even diving for them.

Agaña, the seat of government and principal town, is about eight miles from Apra Harbor, a fine anchorage, but closed to all foreign ships. Guam is a lonely spot, seeing only an occasional army or navy transport, the mail steamer, and a few American commercial ships. Tourists are unknown.

The official currency of the island is that of the United States, but the old Spanish code of laws, slightly modified, still is in use. English, Spanish and native languages are spoken. The schools are conducted in English. The principal exports are copra and coconut oil. The Governor of the island, a naval officer appointed by the President, takes precedence over and is entitled to the honors due an Admiral.

Note: See also "The Greatest Voyage in the Annals of the Sea (Magellan)," *National Geographic Magazine*, December, 1932; "The Unexplored Philippines from the Air," September, 1930; "Sailing the Seven Seas in the Interest of Science," December, 1922; and "Pacific Islands under Japanese Mandate," December, 1921.

Bulletin No. 4, March 11, 1935.

Photograph by P. Simpson

NOT AS SIMPLE AS IT APPEARS TO BE

Guam fishermen show great skill in casting their fine-meshed handnets along the edge of the reefs and bringing them up well filled with small fish. Guam's fishing industry, however, has not been properly developed, despite the fact that nearby waters teem with food fish.

and during the next year only ten new malaria cases appeared. Today Ismailia is one of Egypt's important cities, with a population of 15,500, shaded streets, fine parks, and attractive villas.

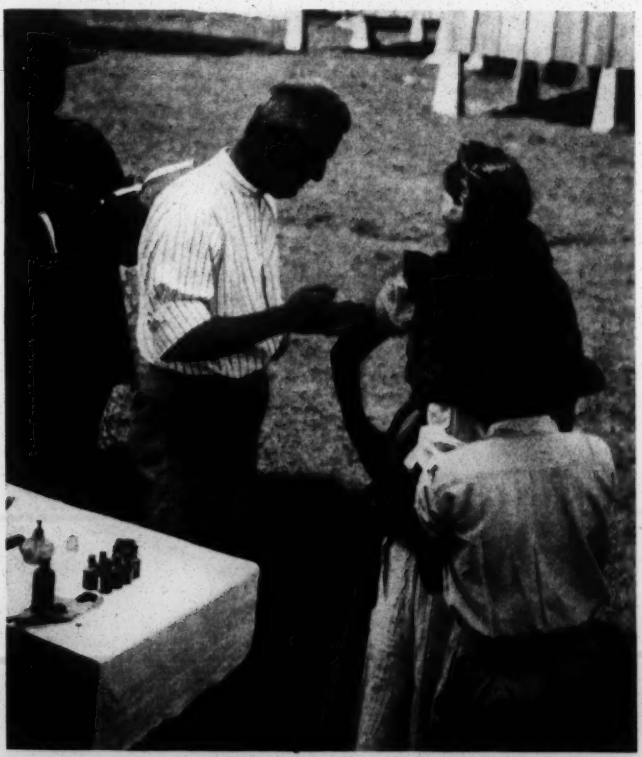
Engineers Reclaim a Malay Port

The Federated Malay States are a hard-fought battleground. When Port Swettenham was settled in 1901, malaria claimed terrific numbers. Business was paralyzed and the future of the city threatened. Then the government built a dike around the river delta site, with gates to drain off the rain water. The swamps dried up, malaria was checked, and the city grew to be one of the important Eastern ports, with an annual trade of some forty-five million dollars.

Occasionally the sequence is reversed, and the mosquito follows man's conquest of new territory. This is the case in arid regions which have been reclaimed by irrigation. The ditches provide ideal breeding places for the *anopheles;* and much of the malaria in our Southwest has been traced to this cause. In the Anglo-Egyptian Sudan, where irrigation is extensive, a set of rules has been drawn up for the farmers, forcing them to keep their ditches cleared, stocked with fish, and carefully watched for leakage or standing water.

Note: See also "Redemption of the Pontine Marshes," *National Geographic Magazine,* August, 1934; "Changing Palestine," April, 1934; "Through Java in Pursuit of Color," September, 1929; "To Bogotá and Back by Air," May, 1928; "Seeing the World from the Air," March, 1928; "Around the World in the *Islander,*" February, 1928; "How Latin America Looks from the Air," October, 1927; "Exploring the Valley of the Amazon in a Hydroplane," April, 1926; "Map-Changing Medicine," September, 1922; "Hunting the Chaulmoogra Tree," March, 1922; "Across the Equator with the American Navy," June, 1921; "Conserving the Nation's Man Power," September, 1917; and "Redeeming the Tropics," March, 1914.

Bulletin No. 5, March 11, 1935.



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THE FIRING LINE IN THE BATTLE AGAINST YELLOW FEVER

An American, Dr. Walter Reed, discovered that yellow fever was spread by the bite of a mosquito. Dr. Hideyo Noguchi, famous Japanese physician and scientist, isolated the yellow-fever germ and developed a serum against it. Above, three natives of Panama are taking the "shots" which will make them immune to the dread disease.

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